

CLAIMS

[c1] 1. An apparatus for providing frame re-transmission in a broadcast communication system, comprising:

a receiver for receiving a message indicative of a frame received in error by a wireless communication device, said message including an identification of said frame;

a memory for storing a predetermined number for determining when to re-transmit said frame; and

a processor for determining a cumulative number of times that said frame was received in error and for ordering a re-transmission of said frame if said cumulative number of times is greater than said predetermined number.

[c2] 2. The apparatus of claim 1 wherein:
said message further comprises a wireless communication device identification;
said memory is further for storing said wireless communication device identification;
said processor is further for determining a cumulative number of times that said frame was received in error, said cumulative number increased each time that said frame is identified by subsequent messages from other wireless communication devices.

[c3] 3. The apparatus of claim 2 wherein said message comprises a negative acknowledgement message (NAK).

[c4] 4. The apparatus of claim 2, wherein said identification comprises a frame number.

[c5] 5. The apparatus of claim 2 wherein said predetermined number comprises a fixed number.

[c6] 6. The apparatus of claim 2 wherein said predetermined number comprises a variable number.

[c7] 7. The apparatus of claim 6 wherein said predetermined number varies in accordance with a latency associated with transmitting new data frames to said wireless communication device.

[c8] 8. The apparatus of claim 7 further comprising a transmit buffer, wherein said latency is determined by counting the number of data frames waiting to be transmitted in said transmit buffer.

[c9] 9. The apparatus of claim 6 wherein said predetermined number varies in accordance with the number of wireless communication devices currently receiving a broadcast transmission.

[c10] 10. A method for providing frame re-transmission in a broadcast communication system, comprising the steps of:

receiving a message indicative of a data frame received in error by a wireless communication device, said message including a data frame identification;

determining a cumulative number of times that said data frame has been received in error; and

re-transmitting said data frame if said cumulative number is greater than a predetermined number.

[c11] 11. The method of claim 10, wherein the step of determining a cumulative number of times that said data frame has been received in error comprises the steps of:

determining whether or not said wireless communication device has previously requested a re-transmission of said data frame; and

incrementing said cumulative number if said wireless communication device has not previously requested a re-transmission of said data frame.

[c12] 12. The method of claim 11 wherein the step of determining whether or not said wireless communication device has previously requested a re-transmission of said data frame comprises the steps of:

receiving a wireless communication device identification associated with said data frame;

determining if said wireless communication device identification is stored in an electronic memory;

determining if said data frame identification is stored in said electronic memory in association with said wireless communication device identification;

determining that said wireless communication device has previously requested a re-transmission of said data frame if said wireless communication device identification is stored in said electronic memory and if said data frame identification is stored in said electronic memory in association with said wireless communication device identification.

[c13] 13. The method of claim 10 wherein said indication comprises a negative acknowledgment message (NAK).

[c14] 14. The method of claim 10 further comprising the steps of:
determining a latency associated with a broadcast transmission; and
adjusting said predetermined number in accordance with said latency.

[c15] 15. The method of claim 14 wherein the step of determining said latency comprises the step of determining a number of data frames waiting to be transmitted in a transmission buffer.

[c16] 16. The method of claim 14 wherein the step of adjusting said predetermined number comprises the steps of:
increasing said predetermined number as said latency decreases; and
decreasing said predetermined number as said latency increases.

[c17] 17. The method of claim 10 further comprising the steps of:
determining a number of wireless communication devices currently receiving a broadcast transmission;
adjusting said predetermined number based on said number of wireless communication devices currently receiving said broadcast transmission.

[c18] 18. The method of claim 17 wherein the step of adjusting said predetermined number comprises the steps of:

increasing said predetermined number as said number of wireless communication devices currently receiving said broadcast transmission increases; and

decreasing said predetermined number as said number of wireless communication devices currently receiving said broadcast transmission decreases.